

## The Department of Mathematics

2021–22–A term

**Course Name** Differential Calculus for EE

**Course Number** 201.1.9671

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/fall2022/courses/differential-calculus-f>

**Lecturer** Dr. Michael Brandenbursky, <brandens@bgu.ac.il>, Office 306

**Office Hours** <https://www.math.bgu.ac.il/en/teaching/hours>

### Abstract

### Requirements and grading<sup>1</sup>

### Course topics

1. Real numbers. Supremum and Infimum of a set. 2. Convergent sequences, subsequences, Cauchy sequences. The Bolzano-Weierstrass theorem. Limit superior and limit inferior. 3. Series. Partial sums, convergent and divergent series, Cauchy criterion. Series of non-negative terms. The root and the ratio tests. Conditional and absolute convergence. The Leibnitz test for series with alternating signs. Rearrangements of series (without proof)
4. The limit of a function. Continuous functions. Continuity of the elementary functions. Properties of functions continuous on a closed interval: boundedness and attainment of extrema. Uniform continuity, Cantor's theorem.
5. The derivative of a function. Mean value theorems. Derivatives of higher order. L'Hospital's rule. Taylor's theorem. Lagrange remainder formula.

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<sup>1</sup>Information may change during the first two weeks of the term. Please consult the webpage for updates